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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/535,710	05/20/2005	Volker Maywald	5000-0124PUS1	7546

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EXAMINER	
WITHERSPOON, SIKARL A	

ART UNIT	PAPER NUMBER
1621	

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/535,710	MAYWALD ET AL.	
	Examiner	Art Unit	
	Sikarl A. Witherspoon	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Compound I and compound IIIa in claims 1 and 8, respectively, *appear* to be missing the substituent designated as (Y). Accordingly, it is unclear if the substituent in the position para to (X) is simply inadvertently missing (Y), or if the bond attached in the position para to (X) is intended to be a methyl group. The dependent claims do not lend clarity to the issue and are likewise rejected.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtze et al (US 5,945,567) and further in view of Rose et al (US 6,576,595) and Rains et al (US 5,476,970).

The instant claims are drawn to a process for preparing benzophenones (formula I) by reacting an acid chloride (formula II) with 3,4,5-trimethoxytoluene in the presence of an aromatic hydrocarbon selected from chlorobenzene, benzotrifluoride, and nitrobenzene, as solvent, from 0.01 to 2 mol% of an iron catalyst, and at a temperature between 60° C and the boiling point of the particular solvent. Further limitations include hydrochloric acid formed during the reaction being removed by stripping with an inert gas, distilling the diluent after the reaction and crystallizing the product in an alcohol, preparing the acid chloride (formula II) by reacting an acid (formula III) with thionyl chloride or phosgene, and preparing the acid (formula III) by brominating an acid of formula IV.

Curtze et al teach a process for preparing 6,6'-dimethyl-2,2',3',4'-tetramethoxy-benzophenone by first, producing a benzoic acid that is subsequently reacted with thionyl chloride to produce the *corresponding* benzoyl chloride; reacting the benzoyl chloride with 3,4,5-trimethoxytoluene in dichloromethane, in the presence of aluminum chloride. The organic phase is concentrated and then recrystallized with methanol (col. 11, lines 35-60).

The differences between Curtze et al and the instant claims are that Curtze et al do not provide an example where an iron catalyst is used, do not teach the exact compound being made, do not teach the same diluent (solvent being used), and do not teach removing the hydrochloric acid produced from the process by stripping with an inert gas.

With regard to the first difference, while Curtze et al do not recite an example of their process wherein an iron catalyst is employed, the reference clearly teaches the preferred Friedel-Crafts catalyst is iron (III) chloride employed at a molar ratio of 0.001 to 0.2 mol, at a temperature from 50 to 180° C (col. 6, lines 35-47).

The examiner finds the fact that the exact compound is not being made immaterial and the instant claims obvious, since it would have been obvious to a person of ordinary skill that the *acylation* process taught by Curtze et al would have been effective in producing the corresponding benzophenone regardless of the substituents present on the reacting compounds.

While Curtze et al do not expressly teach the same diluent(s) that may be employed in their process as those employed by applicants, Rose et al teach that in acylation reactions wherein an substituted benzene is reacted with an aromatic acid halide, suitable solvents include aliphatic hydrocarbons, and aromatic hydrocarbons, such as nitrobenzene and chlorobenzene, and halogenated hydrocarbons such as dichloromethane (col. 2, lines 28-35).

It therefore would have been obvious to a person of ordinary skill in the art, at the time the present invention was made, to employ such solvents as dichloromethane, nitrobenzene, chlorobenzene, methylene chloride, etc., i.e., solvents known to be useful in such processes, since Rose et al teach the equivalence of such solvents in acylation reactions.

Regarding final difference listed by the examiner, Curtze et al does not expressly teach how any hydrochloric acid produced by the acylation reaction is removed.

However, Rains et al also teach the production of benzophenones by acylating a benzene compound with benzoyl chloride, and further, Rains et al teach that the hydrochloric acid produced is removed by venting from a gas release valve on reactor. This method of removal is different from the stripping step claimed in the instant process; however, the examiner takes the position that since Rains et al recognize that hydrochloric acid is produced and is present in the reaction effluent, and discloses a method for its removal, it would have been obvious for a person of ordinary skill in the art, in light of the combined reference teachings, to remove any hydrochloric acid produced by removing gases from reaction effluents. The method of removing gases by stripping with an inert gas is well known in the art and can be accomplished with gases such as nitrogen and carbon monoxide.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikarl A. Witherspoon whose telephone number is 571-272-0649. The examiner can normally be reached on M-F 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

saw

Sikarl A. Witherspoon

SIKARL A. WITHERSPOON
PATENT EXAMINER